

Trend Study 16R-6-04

Study site name: North Slackpile .

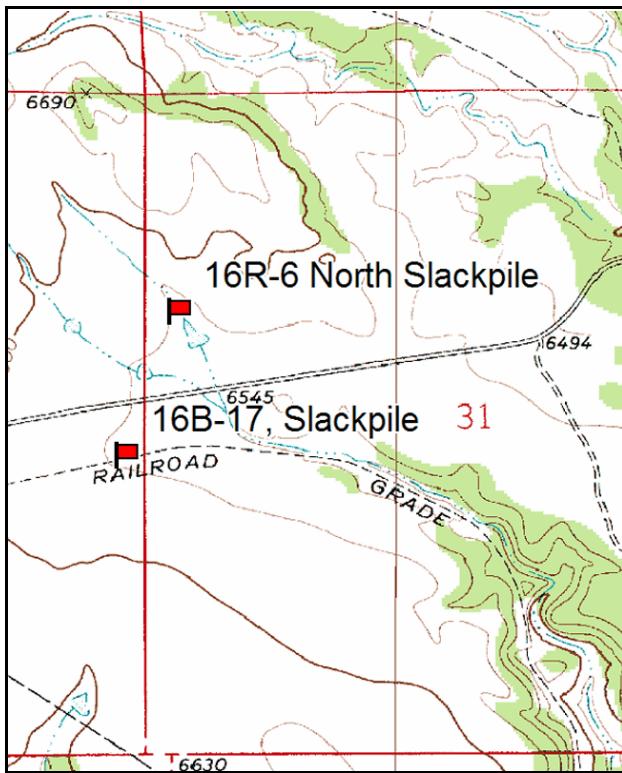
Vegetation type: Wyoming Big Sagebrush.

Compass bearing: frequency baseline 283 degrees magnetic.

Frequency belt placement: line 1 (11ft), line 2 (34ft), line 3 (59ft), line 4 (71ft), line 5 (95ft).

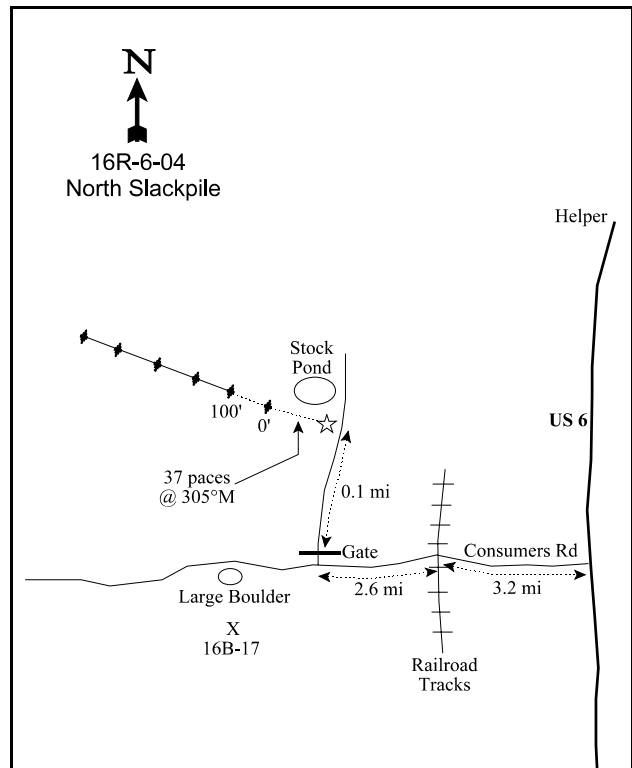
LOCATION DESCRIPTION

On US 6 south of Helper, turn west on to Consumer Road. Proceed west 3.2 miles to railroad tracks. Cross the tracks and continue 2.6 miles to a road on the right with a gate. Go through the gate and travel 0.1 miles to a witness post before a stock pond on the left. Walk 37 paces at 305°M to the start of the frequency baseline. The first stake is marked with a browse tag #453.



Map name: Standardville

Township 13S, Range 9E, Section 31



Diagrammatic Sketch

GPS: NAD 27, UTM 12S 4389146 N, 503019 E

DISCUSSION

North Slackpile - Trend Study No. 16R-6

The North Slackpile trend study is located about a quarter mile north of the Slackpile (16B-17) trend study. The study was established in 1998 and monitors a Wyoming big sagebrush community on critical deer winter range. This area is managed by the Utah Division of Wildlife Resources and is usually grazed every other year. The pasture to the south, across the road, is grazed the other year. The regular trend study Slackpile 16B-17 is in the south pasture. The elevation is 6,600 with a slope of 4-5% and a southeasterly aspect. A stockpond is located about 150 feet from the 0-foot post. Pellet group transect data in 1998 estimated 86 deer days use/acre (213 ddu/ha) and 7 elk days use/acre (17 edu/ha). Livestock use was estimated at 17 cow days use/acre (41 cdu/ha). In 2004, deer, elk, and livestock use was lower: 42 deer days use/acre (104 ddu/ha), 2 elk days use/acre (5 edu/ha), and 3 cow days use/acre (17 cdu/ha).

Soil texture is a loam with a slightly acidic pH of 6.4. Phosphorus (9.7 ppm) is lower than the 10 ppm that may limit normal plant development and growth. The soil is moderately deep with an estimated effective rooting depth of 15 inches. There are very few rocks or pavement on the surface or throughout the profile. There is a considerable amount of bare ground on the site. Vegetation cover declined from 34% in 1998 to 19% in 2004. Cryptogam cover also decreased from 6% to 2%. Signs of active gully erosion were noted in 1998. An erosion class index in 2004 rated erosion on this site as slight, due to signs of rills, gullies, and soil movement.

This area has experienced severe drought conditions from 2001-2003. Annual precipitation has only been 48-60% of average during this time. Spring conditions (April-June) have been very dry and were only 13% of normal in 2002. Browse cover was four times lower in 2004 than it was in 1998. The key browse species is Wyoming big sagebrush. Due to this drought, sagebrush density was about three times lower in 2004 (1,180 plants/acre) than it was in 1998 (3,180 plants/acre). Decadence increased from 19% to 80%. Sagebrush cover decreased from 14% in 1998 to 3% in 2004. Utilization was moderately-heavy in both 1998 and 2004. In 1998 recruitment was good with 26% of the population classified as young. Only 6% were young in 2004, although seedlings were very abundant in 2004. Drought also had a big effect on stickyleaf low rabbitbrush and broom snakeweed. Rabbitbrush density was three times lower in 2004, while snakeweed density was nearly ten times lower.

The warm season grass Blue grama is the most dominant understory species, which may be an indication of heavy spring grazing on this site over a period of many years. Blue grama cover remained constant between 1998 and 2004 at 10%, but the sum of nested frequency significantly declined. This indicates that it is less abundant but more robust. Western wheatgrass also declined significantly. In 1998, it was found in 51% of quadrats, but was only found in 3% in 2004. Bluebunch wheatgrass and needle-and-thread increased significantly in abundance but are still found in small numbers. Scarlet globemallow was much more robust in 2004 as cover increased by about 2%, but abundance was equal to 1998. Seven annual forb species were sampled in 2004 that weren't sampled in 1998.

2004 Comparison to Slackpile 16B-17

The goal of the spring grazing on these pastures is to favor browse which is important for wintering deer. Both pastures experienced the sagebrush die off that has effected the area. The North Slackpile study in the north pasture has a slightly higher density and cover of sagebrush than Slackpile (16B-17) in the south pasture. Sagebrush cover for North Slackpile was 3.0%, while it was only 1.5% at Slackpile. Slackpile had less grass also. Sum of nested frequency for all perennial grasses was lower for Slackpile (228) than for North Slackpile (341). Cover of perennial grasses was about 12% for the north compared to only 4% for the south, which may be low because of grazing when the site was monitored. Slackpile actually had more cool season grasses

(nested freq of cool season was 198 compared to 101 for North Slackpile) than the north pasture did. Grass for North Slackpile was mostly made up of the warm season blue grama, which made up 87% of the total grass cover.

2004 TREND ASSESSMENT

Trend for soil would be considered stable, for there was not enough increase in bare soil to warrant a downward change in trend. The decline of shrub cover was mediated by increases in litter cover. Dry conditions have also reduced cryptogamic cover, which helps hold soil in place. Browse trend is down due to the dramatic decline of the key species Wyoming big sagebrush. Density in 2004 is three times lower than 1998 and decadency of the remaining population was very high at 80%. Stickyleaf low rabbitbrush and broom snakeweed density also declined. Herbaceous understory trend is slightly down. Nested frequency for perennial grasses is down, but cover for grasses actually increased. Sum of nested frequency for perennial forbs increased as did cover. Annual forbs increased as well. The loss of perennial grasses makes the understory trend slightly down. The Desirable Components Index (see methods) rating was excellent in 1998, but dropped to fair in 2004. Sagebrush die off and high decadence have brought this score down.

TREND ASSESSMENT

soil - stable (3)

browse - down (1)

herbaceous understory - down slightly (2)

1998 winter range condition (DC Index) - 69 (excellent) Wyoming big sagebrush type

2004 winter range condition (DC Index) - 28 (fair) Wyoming big sagebrush type

HERBACEOUS TRENDS --

Management unit 16R, Study no: 6

Type	Species	Nested Frequency		Average Cover %	
		'98	'04	'98	'04
G	Agropyron smithii	_b 148	_a 9	1.34	.16
G	Agropyron spicatum	_a 5	_b 22	.03	.13
G	Bouteloua gracilis	_b 301	_a 240	10.07	10.48
G	Elymus salina	-	2	-	.15
G	Oryzopsis hymenoides	5	11	.03	.07
G	Sitanion hystrix	37	28	.31	.58
G	Stipa comata	_a 10	_b 29	.15	.49
Total for Annual Grasses		0	0	0	0
Total for Perennial Grasses		506	341	11.94	12.09
Total for Grasses		506	341	11.94	12.09
F	Arabis spp.	-	-	.00	-
F	Calochortus nuttallii	_a -	_b 33	-	.09
F	Chenopodium fremontii (a)	-	-	-	.03
F	Chenopodium leptophyllum(a)	_a -	_b 67	-	.42
F	Descurainia pinnata (a)	-	9	-	.07
F	Gayophytum ramosissimum(a)	-	5	-	.01

T y p e	Species	Nested Frequency		Average Cover %	
		'98	'04	'98	'04
F	Lappula occidentalis (a)	-	3	-	.01
F	Lomatium spp.	-	2	-	.00
F	Lygodesmia grandiflora	-	4	-	.03
F	Phlox longifolia	40	48	.09	.20
F	Plantago patagonica (a)	_a -	_b 12	-	.06
F	Ranunculus testiculatus (a)	_a -	_b 19	-	.03
F	Schoenocrambe linifolia	-	2	-	.01
F	Sphaeralcea coccinea	76	73	.54	2.54
F	Tragopogon dubius	-	1	-	.00
F	Trifolium spp.	_A -	_b 19	-	.10
Total for Annual Forbs		0	115	0	0.64
Total for Perennial Forbs		116	182	0.63	3.00
Total for Forbs		116	297	0.63	3.64

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS --

Management unit 16R, Study no: 6

T y p e	Species	Strip Frequency		Average Cover %	
		'98	'04	'98	'04
B	Artemisia tridentata wyomingensis	83	40	13.80	3.04
B	Atriplex canescens	1	2	.03	.63
B	Chrysothamnus nauseosus	2	0	-	-
B	Chrysothamnus viscidiflorus viscidiflorus	38	13	1.07	.06
B	Gutierrezia sarothrae	86	39	3.89	.66
B	Opuntia spp.	9	10	.36	.30
B	Pediocactus simpsonii	0	3	-	.03
B	Ribes spp.	1	0	-	-
B	Tetradymia canescens	0	1	-	-
Total for Browse		220	108	19.17	4.73

CANOPY COVER, LINE INTERCEPT --

Management unit 16R, Study no: 6

Species	Percent Cover '04
<i>Artemisia tridentata wyomingensis</i>	2.08
<i>Atriplex canescens</i>	.66
<i>Chrysothamnus viscidiflorus viscidiflorus</i>	.05
<i>Gutierrezia sarothrae</i>	.53
<i>Pediocactus simpsonii</i>	.05
<i>Tetradymia canescens</i>	.06

KEY BROWSE ANNUAL LEADER GROWTH --

Management unit 16R, Study no: 6

Species	Average leader growth (in) '04
<i>Artemisia tridentata wyomingensis</i>	3.2
<i>Atriplex canescens</i>	4.2

BASIC COVER --

Management unit 16R, Study no: 6

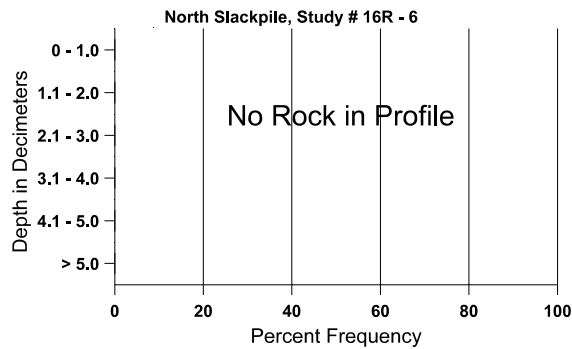
Cover Type	Average Cover % '98 '04	
Vegetation	34.43	19.45
Rock	.39	.41
Pavement	.39	.84
Litter	13.63	23.67
Cryptogams	5.50	2.01
Bare Ground	50.01	51.99

SOIL ANALYSIS DATA --

Management unit 16R, Study no: 6, Study Name: North Slackpile

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	ds/m
14.6	58.7 (16.7)	6.4	40.7	34.7	24.6	1.9	9.7	83.2	1.0

Stoniness Index



PELLET GROUP DATA --

Management unit 16R, Study no: 6

Type	Quadrat Frequency		Days use per acre (ha)	
	'98	'04	'98	'04
Rabbit	15	22	-	-
Elk	3	3	7 (17)	2 (5)
Deer	41	35	86 (213)	42 (104)
Cattle	4	1	17 (41)	3 (7)
Antelope	1	-	-	-

BROWSE CHARACTERISTICS --

Management unit 16R, Study no: 6

		Age class distribution (plants per acre)					Utilization					
Year	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% dying	% poor vigor	Average Height Crown (in)
Artemisia tridentata wyomingensis												
98	3180	280	820	1760	600	900	48	19	19	18	19	27/41
04	1080	820	60	160	860	2360	33	35	80	65	65	19/25
Atriplex canescens												
98	20	-	-	20	-	-	0	100	0	-	0	27/45
04	40	-	-	-	40	-	100	0	100	-	0	24/37
Atriplex confertifolia												
98	0	-	-	-	-	-	0	0	-	-	0	-/-
04	0	-	-	-	-	-	0	0	-	-	0	20/24
Chrysothamnus nauseosus												
98	60	-	40	20	-	-	0	0	-	-	0	-/-
04	0	-	-	-	-	-	0	0	-	-	0	-/-

		Age class distribution (plants per acre)					Utilization					
Y e a r	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% dying	% poor vigor	Average Height Crown (in)
<i>Chrysothamnus viscidiflorus viscidiflorus</i>												
98	2360	-	480	1860	20	-	36	52	1	.84	.84	7/12
04	720	620	80	580	60	-	0	0	8	3	3	6/7
<i>Gutierrezia sarothrae</i>												
98	15440	-	380	15000	60	60	0	0	0	.25	.25	10/8
04	1600	300	160	1400	40	20	8	4	3	1	1	6/6
<i>Opuntia</i> spp.												
98	220	-	40	160	20	-	0	0	9	9	9	3/5
04	240	-	40	200	-	-	0	0	0	-	0	4/10
<i>Pediocactus simpsonii</i>												
98	0	-	-	-	-	-	0	0	-	-	0	-/-
04	60	-	-	60	-	-	0	0	-	-	0	1/2
<i>Ribes</i> spp.												
98	220	-	-	220	-	-	0	0	-	9	0	-/-
04	0	-	-	-	-	-	0	0	-	-	0	-/-
<i>Tetradymia canescens</i>												
98	0	-	-	-	-	-	0	0	-	-	0	-/-
04	20	-	-	20	-	-	100	0	-	-	0	10/10